

**A new species of Hesionidae, *Glyphohesione nicoyensis*
(Annelida: Polychaeta), from the Gulf of Nicoya, Costa Rica**

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Abstract.—A new species, *Glyphohesione nicoyensis* (Family Hesionidae), is described from the Gulf of Nicoya on the Pacific coast of Costa Rica. Several morphological characters described for the species *G. klatti* Friedrich, 1950, and *G. longocirrata* Licher, 1994 are clarified.

The species *Glyphohesione klatti* Friedrich, 1950 was first collected from Helgoland and originally included in the family Hesionidae (Friedrich 1950). Eliason (1962) subsequently transferred this species to the genus *Ancistrosyllis* in the family Pilargidae due to the presence of emergent notopodial spines similar to those described for *Synelmis albini* (Langerhans, 1881) (= *Ancistrosyllis albini*). Pettibone (1966) later assigned this species to the genus *Synelmis* Chamberlin, 1919, and suggested that *S. klatti* was perhaps a juvenile form of *S. albini*.

In a review of the gross morphology of the pilargid brain, Fitzhugh & Wolf (1990) noted significant differences between the brain of *S. klatti* and that of other species within the genus (*S. ewingi* Wolf, 1986, and *S. acuminata* Wolf, 1986). Fitzhugh & Wolf (1990), therefore, recommended that *S. klatti* be removed from *Synelmis* and perhaps returned to its original genus, *Glyphohesione* Friedrich. Licher & Westheide (1994) formally removed *Glyphohesione* from synonymy with the genus *Synelmis* based on its lack of emergent neuropodial spines, which are considered apomorphic for *Synelmis*. Results of a cladistic analysis of the family Pilargidae by Licher & Westheide (1994), based on 28 morphological characters, also indicated that *G. klatti* shares many plesiomorphic characters with

juveniles of the family Hesionidae Licher (1994) thus transferred the genus *Glyphohesione* Friedrich to the family Hesionidae based on its elongate palpostyles, anteriorly situated lateral antennae and well developed antennae, tentacular cirri, parapodial cirri, and anal cirri. Licher (1994) restricted the known distribution of *G. klatti* Friedrich, 1950, to northern Europe and the Mediterranean and described a new species, *G. longocirrata* Licher, 1994, from material collected in the Gulf of Mexico and originally identified as *S. klatti* by Wolf (1984).

Material collected during benthic sampling in the Gulf of Nicoya, Costa Rica (see Maurer & Vargas 1984 for station data), and previously identified as *Synelmis klatti* Friedrich by Dean (1996), was re-examined in light of Licher's (1994) redescription of *G. klatti* and a new species of *Glyphohesione* is here described.

Glyphohesione nicoyensis, new species
Figs. 1, 2

Synelmis albini (Langerhans).—Maurer & Vargas, 1984:101 (in part); Maurer et al., 1988:48 (in part).

Synelmis klatti (Friedrich).—Dean, 1996: 74.

Material examined.—Gulf of Nicoya, Sta. 23, 9°48'35"N, 84°43'50"W, 35 m, mud, Jul 1980, (1, USNM 079958). Sta. 24,

9°49'25"N, 84°41'20"W, 11 m, sand, Jun 1981, (4 Paratypes, UCR 113-01-A and 1); Aug 1981, (4). Sta. 28, 9°52'16"N, 84°45'30"W, 26 m, mud, Jul 1980, (2) (USNM 079964); Oct 1980, (1); Jan 1981, (2 Paratypes, MCZ 4018 & 4020); Jun 1981, (2 Paratypes, MCZ 4017); Aug 1981, (3, Paratypes UCR 113-01-B, 1 Paratype USNM 180394). Sta. 29, 9°54'55"N, 84°45'15"W, 18 m, muddy sand, Jul 1980, (2) (USNM 079968); Aug 1981, (3 Paratypes, MCZ 4019). Sta. 30, 9°54'40"N, 84°45'50"W, 18 m, muddy sand, Oct 1980, (3); Jan 1981, (4); Apr 1981, (2); Jun 1981, (2). Punta Morales, 10°04'N, 85°58'W, intertidal, Lagartos sand flat, Aug 1996; muddy sand (1 Holotype, MCZ 4015), intertidal, boat ramp, sand (1), intertidal, rocky sand (1, Paratype UCR 113-01-C), intertidal, sand (1).

Additional material examined.—*Glyphohesione* Friedrich, English Channel: Survey Sta. M 16T, 51°24.6'N, 08°05'W, 112 m, J. P. Hartley coll., Aug 1975 (USNM 58901), 2 incomplete specimens.—*Glyphohesione longocirrata* Licher, Northwest North Atlantic Ocean: Gulf of Maine: Massachusetts, off Cape Cod: NEEB Sta. 41, 41°37.30'N, 69°15.42'W, 164 m, 27 Feb 1977 (USNM 91310, 5 specimens).

Type locality.—Gulf of Nicoya, Punta Morales mid intertidal, western side of the Lagatos sandflat, muddy sand.

Description.—Holotype complete, 37 segments, 4.0 mm long, 0.5 mm maximum width (setiger 6) without parapodia, 0.6 mm wide including parapodia (Fig. 1A). Anterior 6 segments cylindrical, remaining segments dorso-ventrally flattened and deeply incised (Fig. 1B). Fifth and sixth segments enlarged in holotype (these segments also enlarged in paratype MCZ 4020 with dense white (in ethanol) material identified as developing ova by squash preparation). Mid dorsum and dorsal parapodial lobes light tan to dark grey in mid and posterior region, anterior region colorless in ethanol.

Prostomium as long as or slightly longer than wide, divided anteriorly by a wide fur-

row, lateral margins slightly concave. Palpophores fused to prostomium, inserted antero-ventrally, palpstyles filiform, shorter than lateral antennae (Fig. 1A). Three well-developed cirriform antennae, laterals inserted anteriorly, median at posterior margin of prostomium, median subequal in length, more slender than laterals. Paired, pigmented eyespots at anterior third of the prostomium. Dissection in CMCP-10 mounting medium revealed brain morphology similar to that of *Sigambra tentaculata* (Fitzhugh and Wolf, 1990, Fig. 1a) with indistinct separation between hindbrain and midbrain and tapering bilobed hindbrain (lobes somewhat more elongate and pointed than that of *S. tentaculata*). Pigmented nuchal organs present (Fig. 1A, nu), paired nuchal slits at postero-lateral margin of the prostomium; no cilia noted using oil immersion.

First segment encircles prostomium posteriorly, clearly distinct from prostomium (Fig. 1A). Two pairs of subequal tentacular cirri, more robust and longer than lateral antennae. Large, brown, pigmented bulging areas (actually sub-dermal nuchal organs) posterior to prostomium dorso-laterally (Fig. 1A).

Parapodia biramous, distinctly set apart from trunk, except in anterior segments. Dorsal and ventral cirri of first setiger longer than those of other setigers (Fig. 1C); those of posterior setigers shorter than tentacular cirri, extending beyond tip of neuropodial lobe (Fig. 1D). Single notaciculum with stout emergent notopodial spine from setiger 8 (7–10) (Fig. 2A).

Neuropodia conical, truncate, with a cone-shaped presetal lobe. Holotype with up to 14 setae per neuropodium (a maximum of 14–18 neurosetae in other specimens) decreasing in number posteriorly. Single neuracacula; neurosetae simple, of varying length, finely serrate with smooth slightly crooked tip (Figs. 2B); longer neurosetae finely serrate, serrations becoming minute and difficult to see distally (Fig. 2C). Ventral cirri one-half length of dorsal

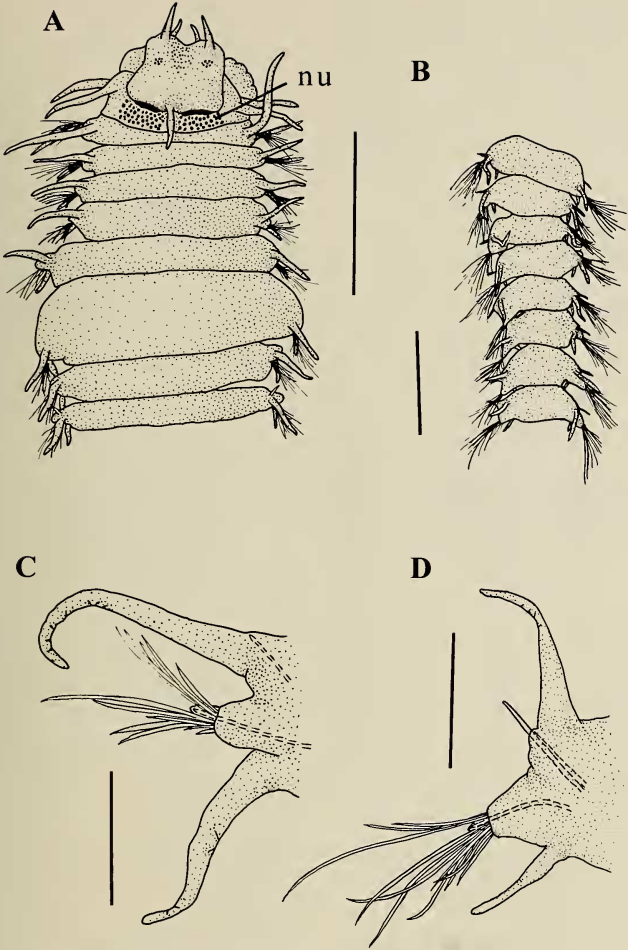


Fig. 1. *Glyphohesion nicoyensis*, new species: A. Anterior end, dorsal view (MCZ 4015); B. Mid body region, dorsal view (MCZ 4015); C. Parapodia, setiger one, posterior view (UCR 113-01-A); D. Median parapodia, posterior view (UCR ??1). Scale bar A & B = 100 μ m; C & D = 500 μ m. Abbreviation.—nu, nuchal organ (pigmented bulging area).

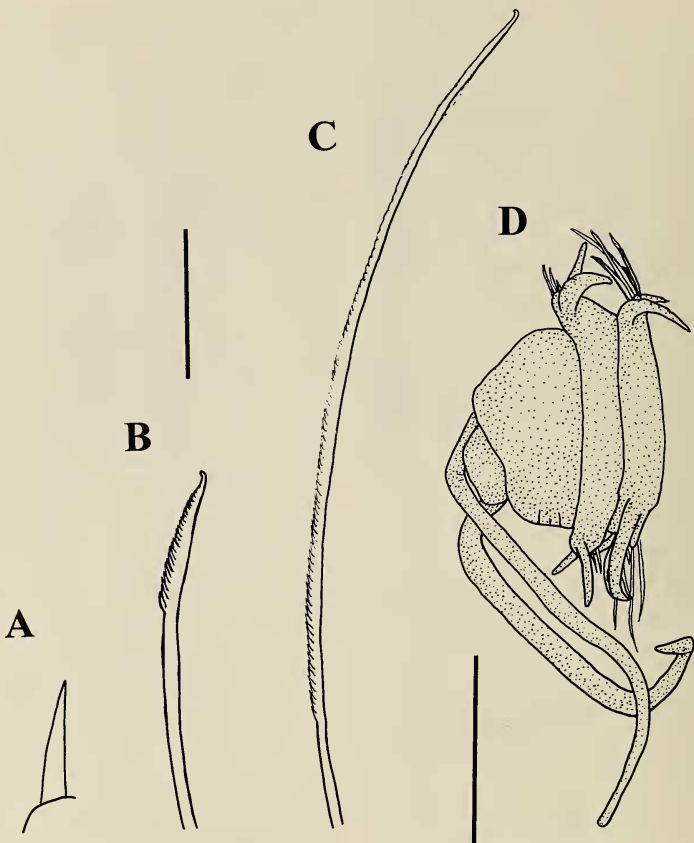


Fig. 2. *Glyphohesione nicoyensis*, new species: A. Notopodial spine, posterior setiger (UCR 113-01-A); B. Short neuroseta, setiger 12 (UCR 113-01-A); C. Long neuroseta, setiger 12 (UCR 113-01-A); D. Pygidium, dorsal view (MCZ 4015). Scale bar A, B & C = 40 μ m; D = 500 μ m.

cirri, less robust, extending slightly beyond neuropodial lobe.

Pygidium with rounded anal hood dorsally, two long, filiform, lateral anal cirri (Fig. 2D).

Distribution.—*Glyphohesione nicoyensis*, new species, is known from the Gulf of

Nicoya, Costa Rica in mud, muddy sand, and sandy sediments from the intertidal to 35 m.

Remarks.—This species is placed within the genus *Glyphohesione* based on its simple setae, emergent notopodial spines, palphophores fused with the prostomium, elon-

gate palpostyles, and the location of the three slender antennae. *Glyphohesione nicoyensis*, new species, differs from *G. klatti* in the presence of paired eyespots and the first appearance of emergent notopodial spines, beginning at setigers 7–10 in *G. nicoyensis* and setigers 5–8 in *G. klatti*. *G. nicoyensis* also has fewer neurosetae per parapodium than *G. klatti*, with the maximum number of neurosetae per notopodium being 25 in *G. klatti* and 14 to 18 in *G. nicoyensis*. Finally, the dorsal and ventral parapodial cirri of the mid and posterior body region extend beyond the tip of the neuropodial lobe in *G. nicoyensis* while in *G. klatti* the ventral cirri extend beyond the neuropodial lobe only in the anterior region.

Glyphohesione nicoyensis differs from *G. longocirrata* in the presence of paired eyespots and the first appearance of the emergent notopodial spines, those of *G. nicoyensis* first appear at setigers 7–10 as compared to setigers 10–15 in *G. longocirrata*. The maximum number of neurosetae per setiger is 14–18 in *G. nicoyensis* and 8–14 setae in *G. longocirrata*. *G. nicoyensis* and *G. longocirrata* also differ in the length of the dorsal cirri in the anterior body region. In *G. longocirrata* the anterior dorsal cirri are almost equal in length to the body width while they are much shorter relative to body width in *G. nicoyensis* (Fig. 1A). Lastly, the neurosetae of *G. longocirrata* are more bladelike and coarsely toothed (see below) than those of *G. nicoyensis*.

Examination of specimens identified as *G. klatti* from the English Channel (USNM 58901) and *G. longocirrata* from Massachusetts, off Cape Cod (USNM 91310) revealed some inconsistencies with the species descriptions by Licher 1994. There is a distinct separation between the prostomium and the first segment in both of these species while the figures of Licher (1994, Figs. 1A, B, 3A, B) show them to be dorsally fused. Also, the neurosetae of *G. longocirrata* are wider and more blade-like with longer, coarser teeth than those of both *G. nicoyensis* and *G. klatti*. Finally, Licher

describes the tips of the neurosetae of *G. longocirrata* as being "minutely bidentate" but close examination disclosed that all the neurosetae had complete, slightly crooked, tips similar to those seen in *G. nicoyensis*.

Etymology.—This species is named for the type locality, the Gulf of Nicoya on the Pacific coast of Costa Rica.

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